

Serial No. 10/696.175

-2-

Docket No. 1948-4823

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (previously presented) An indicator lamp, for a motor vehicle, comprising:

a light source arranged along an optical axis oriented from the rear to the front of the indicator lamp for emitting light rays toward the front, at a solid angle centered on the axis; and

an optical device for recovering and distributing the rays of light emitted by the source for providing, toward the front, an indicating function, the optical device having:

a coaxial annular reflector; and

a light engine in front of the light source for distributing the rays of light emitted by the light source in directions that are generally transverse about the optical axis, toward the coaxial annular reflector that is provided for distributing the rays of light, coming from the light engine, toward the front, generally in a direction parallel to the optical axis, so as to provide the indicating function, said light engine being made of a transparent material having a refractive index greater than that of air, and having:

an inlet face which is arranged axially opposite the light source and having a profile, in axial section, such that most of the rays of light emitted by the source penetrate into the light engine;

an outlet face which is arranged generally radially opposite at least one axial section of the coaxial annular reflector;

at least one front inner reflection face which is provided to deflect at least part of the rays of light that enter the light engine, toward the outlet face, such that the

Serial No. 10/696,175

-3-

Docket No. 1948-4823

rays of light leave the light engine by way of the outlet face by being refracted, and such that these rays of light strike the coaxial annular reflector at given angles of incidence; and

a rear inner reflection face of concave parabolic annular shape, which is focused on the light source and which reflects the rays of light axially toward the front.

2. (canceled)

3. (currently amended) An indicator lamp according to the claim ~~[[2]]~~ 1, wherein the light engine comprises a front inner reflection face of convex parabolic annular shape, which is arranged axially opposite the rear reflection face and which is designed to cause the reflection of the rays of light, reflected by the rear reflection face, in a given direction toward an associated section of the outlet face.

4. (previously presented) An indicator lamp according claim 3, wherein the section of the outlet face that is associated with the parabolic front reflection face has a convex hemispherical annular shape, which is centered on a focus of the associated parabola such that the rays of light reflected by the parabolic front reflection face pass through the outlet face in a substantially orthogonal manner.

5. (currently amended) An indicator lamp according to claim 1, wherein the light engine comprises a conical or frustoconical front reflection face which is centered on the optical axis such that the axial rays of light, which are reflected by the conical front face, strike the outlet

897948 v1

Serial No. 10/696,175

-4-

Docket No. 1948-4823

face at an angle of incidence that is determined by the value of the angle at the vertex of the conical face.

6. (previously presented) An indicator lamp according to claim 5, wherein the angle at the vertex of the conical face is substantially equal to ninety degrees, and wherein the portion of the outlet face that is arranged radially opposite the conical face is substantially cylindrical, so that the rays of light reflected by the conical face pass through the outlet face in a substantially radial direction.

7. (previously presented) An indicator lamp according to claim 3, wherein at least one axial section of a front reflection face is obtained by anamorphosis, for producing a spatial distribution of the rays of light transmitted toward the reflector for providing a given indicating function.

8. (previously presented) An indicator lamp according to Claim 1, wherein the light engine comprises a peripheral annular portion which extends transversely outwards and which comprises a front outlet face provided with coaxial circular ridges along the optical axis, the ridges forming diopters designed to refract, axially toward the front, the rays of light coming from the inlet face.

9. (currently amended) An indicator lamp according to Claim ~~[[2]]~~ 1, wherein the light engine comprises a front reflection face which is provided with catadioptric patterns that are designed to reflect, the rays of light coming from the rear reflection face, toward the outlet face in a direction that is substantially orthogonal to the outlet face.

897948 v1

Serial No. 10/696,175

-5-

Docket No. 1948-4823

10. (previously presented) An indicator lamp according to claim 9, wherein the outlet face is at least partly coincident with the rear reflection face.

11. (previously presented) An indicator lamp according to Claim 9, wherein each catadioptric pattern comprises two inclined faces which between them form an angle of given value, said faces being arranged with respect to the optical axis such that each ray parallel to the optical axis that strikes a catadioptric pattern is reflected on one of the two faces and then on the opposite face before being transmitted toward the outlet face.

12. (previously presented) An indicator lamp according to claim 11 wherein each catadioptric pattern is truncated in the vicinity of the vertex of the angle formed by the two inclined faces, such that part of the rays of light that strike the catadioptric pattern are refracted toward the front, through the truncation.

13. (previously presented) An indicator lamp according to claim 1, wherein the front reflection face has a coaxial annular shape, and wherein the light engine comprises a front central outlet face adjacent to the front reflection face, which is provided to refract the rays of light, coming from the light source, directly toward the front.

14. (previously presented) An indicator lamp according to claim 13, wherein the front central outlet face comprises a series of elementary dioptric distribution elements which are provided so

Serial No. 10/696,175

-6-

Docket No. 1948-4823

as to each form, from the rays of light passing through them, an elementary light beam that is directed toward the front.

15. (previously presented) An indicator lamp according to claim 1, wherein the inlet face of the light engine comprises a concave hemispherical portion which is centered on the light source.

16. (previously presented) An indicator lamp according to claim 1, wherein the inlet face comprises a central portion that forms a collimator, so as to refract the rays of light axially toward the front.

17. (previously presented) An indicator lamp according to Claim 1, wherein the light engine is made of a transparent material having a refractive index greater than that of air, and wherein the light engine comprises:

a generally hemispherical inlet face which is centered on the light source and which comprises coaxial annular echelons provided for deflecting the rays of light by means of refraction;

an outlet face which is arranged generally radially opposite at least one axial section of the coaxial annular reflector, such that the rays of light leave the light engine by way of the outlet face by being refracted, and such that these rays of light strike the coaxial annular reflector at given angles of incidence.

18. (previously presented) An indicator lamp according to claim 17, wherein the outlet face of the light engine has a generally hemispherical shape centered on the source.

Serial No. 10/696,175

-7-

Docket No. 1948-4823

19. (previously presented) An indicator lamp according to claim 17, wherein the light engine comprises a light diffusion face which is arranged axially opposite a central zone of the inlet face, so as to distribute, generally axially toward the front, part of the rays of light emitted by the source.

20. (previously presented) An indicator lamp according claim 1, wherein the front face of the coaxial annular reflector is reflective, and wherein the front face comprises at least one axial section that is parallel to an associated axial section of the front reflection face of the light engine.

21. (previously presented) An indicator lamp according to claim 1, wherein the front face of the reflector is reflective, and wherein the front face comprises a series of elementary reflection facets that are oriented, with respect to the angle of incidence of the rays of light coming from the light engine, so as to reflect the rays of light, generally axially toward the front, thereby each forming an elementary light beam, the image of which, on a screen placed in front of the indicator lamp, corresponds to the indicating function to be provided.

22. (previously presented) An indicator lamp according to claim 21, wherein the front face of the reflector is echeloned axially toward the front and transversely outwards.

23. (previously presented) An indicator lamp according to claim 1, wherein:

Serial No. 10/696.175

-8-

Docket No. 1948-4823

the coaxial annular reflector is made of a transparent material having a refractive index greater than that of air;

the profile of the front face of the reflector, with respect to the angle of incidence of the rays of light coming from the light engine, is such that said rays of light are refracted inside the reflector when they strike the front face of the reflector; and

the rear face of the reflector is configured to reflect said rays of light toward the front, such that they are refracted through the front face in a generally axial direction.

24. (previously presented) An indicator lamp according to claim 23, wherein the rear face of the reflector comprises a reflective coating.

25. (previously presented) An indicator lamp according claim 24, wherein the rear face of the reflector comprises a series of elementary reflection facets that are oriented in a given manner, with respect to the angle of incidence of the rays of light that are refracted inside the reflector through the front face.

26. (previously presented) An indicator lamp according to Claim 23, wherein the front face of the reflector comprises generally axial portions, which are arranged substantially orthogonally with respect to the direction of the rays of light coming from the light engine, and generally radial portions, which are located between two axial portions, and in that the rear face of the reflector comprises axial sections that are substantially parallel to the associated sections of the front reflection face of the light engine, such that the rays of light coming from the light engine:

Serial No. 10/696,175

-9-

Docket No. 1948-4823

are refracted through the axial portions toward the inside of the reflector, without being deflected,

then are reflected, axially toward the front, on the rear face of the reflector,

then are refracted through the radial portions, toward the outside of the reflector, generally axially toward the front.

27. (previously presented) An indicator lamp according to Claim 23, wherein the rear face of the reflector comprises a series of catadioptric patterns having two faces, such that the rays of light coming from the light engine are refracted through the front face of the reflector, toward the inside of the reflector,

then are reflected twice on a catadioptric pattern so as to be directed toward the front, and

then are refracted through the front face of the reflector, toward the outside of the reflector, generally axially toward the front.

28. (currently amended) An indicator lamp according to Claim 26, wherein the front face of the reflector comprises a series of elementary dioptric distribution elements which are designed to refract the rays of light, coming from the rear face of the reflector, thereby forming elementary light beams directed toward the front, the image of which, on a screen placed in front of the indicator lamp, corresponds to the indicating function to be provided.

29. (previously presented) An indicator lamp according to claim 1, wherein the light engine is integrated in the light source.



Serial No. 10/696,175

-10-

Docket No. 1948-4823

30. (currently amended) An indicator lamp having an optical axis extending from a first end portion to a second end portion, the lamp comprising:

a light source disposed so as to emit light rays toward the second end portion along said axis;

a coaxial annular reflector; and

a light engine disposed downstream of the light source for distributing said light rays in directions that are generally transverse about the optical axis toward the coaxial annular reflector, the light engine being made of a transparent material having a refractive index greater than that of air, the light engine including:

an inlet face which is arranged axially opposite the light source and having a profile in axial section, is such that most of the rays of light emitted by the source penetrate into the light engine;

an outlet face which is arranged generally radially opposite at least one axial section of the coaxial annular reflector;

at least one front inner reflection face which is provided to deflect at least part of the rays of light that enter the light engine toward the outlet face, such that the rays of light leave the light engine by way of the outlet face by being refracted, and such that these rays of light strike the coaxial annular reflector at given angles of incidence; and

a rear inner reflection face of concave parabolic annular shape, which is focused on the light source and which reflects the rays of light axially toward the front.